**IT Applications Unit 3, AOS 1, Online Communities**

**Complete the following, from pgs, 28- 32: Transmission media**

**TRANSMISSION MEDIA:**

**PHYSICAL TRANSMISSION:**

**Twisted – pair cable**

1. **What is twisted pair cable?**

A twisted pair cable is used to carry signals over a network and is comprised of 8 wires twisted in four separate pairs, and then twisted as a group. The twisting helps to prevent outside interference because the wires are not running parallel to any outside cables.

1. **Why do new networks use CAT 5E or CAT 6 rather than CAT 3?**

Networks use CAT 5E or CAT 6 rather than CAT 3 because it is more efficient in sending data making the transfer rate quicker.

1. **What are some disadvantages of CAT 5E and why is it used in so many installations?**

The CAT 5E has a maximum length of 100m but it is used in most instillations because they are LAN networks and LAN networks don’t need to cover a great distance.

1. **What type of networks is this cable largely used in?**

This type of cable is used the most in star networks.

**Coaxial Cable**

1. **Describe the characteristics of this cable.**

Coaxial cable has a single copper wire surrounded by an insulating material, a braided metal and a plastic outer coating. Coaxial cables carry data up to 185 meters at 10 Mbps.

1. **What network is it used in?**

Coaxial cable is used in bus networks and it is commonly used to connect a TV to the aerial.

**Fibre-optic cable**

1. **Describe the characteristics of this cable.**

Fibre optic cable consists of numerous thin glass or plastic strands that use light to transmit signals. It is very reliable because it is not susceptible to electromagnetic interference and can carry data for distance of up to 2km at speeds of Gbps. This number depends on the type of cable.

1. **Why are fibre-optic cables often used to connect major switches inside buildings as well as between buildings?**

Fibre optic is the best option because it has no noise interference and is also the fastest and most reliable way to transfer data.

1. **What are the disadvantages of this cable?**

Fibre optic cables require expensive connectors that are needed at each end to convert between optical/electrical network signals and it often costs more than double what a typical broadband connection costs. Fiber optic connections are also not available in many areas.

**WIRELESS TRANSMISSION:**

**Radio Waves**

1. **What is required for radio transmissions to occur?**

For radio transmissions to occur a transmitter is needed to broadcast the radio signal and a receiver is needed to accept it.

1. **Wi-Fi networks use radio waves. What are its advantages over a cable network and what are its disadvantages?**

**Advantages:**

The network can be accessed from any point within the range of an access point meaning that there is more flexibility and no wires or unsightly cables are needed. This is a great advantage for buildings that are heritage listed meaning that no wires are visible.

**Disadvantages:**

Wires communications are slower in speed than cabled networks.

1. **Describe the characteristics of Bluetooth.**

Bluetooth is a standard that uses short range radio waves to transmit data over distances of up to 10 meters. Data transfer is only at the rate of 2 Mbps, making it slower than other wireless transmissions. It is used to connect notebooks, handheld devices and mobile phones.

**Microwaves**

1. **Describe the characteristics of microwave transmission.**

Microwaves require line of sight transmission where there is no obstruction between the send and receiving dish. It can handle very high data rates over short distances and have a shorter frequency. Examples are AM and FM radio bands.

1. **What are the limitations of microwave transmission?**

* Microwave transmission requires line of sight transmission.
* Expensive towers and receiving dishes.
* Rain and aeroplanes can interrupt transmission.

**Satellite**

1. **Satellite transmission can be in what forms?**

Satellite transmission can be in the form of radio waves or microwaves.

1. **What are the limitations of this form of transmission?**

The biggest limitation of this form of transmission is the distance the waves have to travel to the satellite and back to the earth station.

1. **Who might use this form of transmission?**

Satellite transmission is used for television broadcasts, video conferencing, GPS and internet connections.

**Infra-red**

1. **Describe the characteristics of infra-red transmission.**

Infra red transmission uses the same technology as the TV and video remote controls/ it is quite effective over short distances although the rate of transmission is slow compared to using cables. Infra red transmission uses light waves and requires line of sight access.

1. **Why is radio wireless networking preferable to infra-red wireless networking?**

Radio wireless networking is preferred because it does not require line of sight access.